

## **REMARKS**

### **The Amendments**

The claims are amended to positively recite that the material is in the form of a 0.05 - 0.3 mm thick foil strip. This is in response to the statement in the Office Action that the recitation of the amount of precipitates on the foil strip was merely a future property and not a claim limitation. The further claim amendments merely make minor linguistic changes.

It is submitted that the above amendments would put the application in condition for allowance or materially reduce or simplify the issues for appeal. The amendments do not raise new issues or present new matter and do not present additional claims without the cancellation of an equal number of finally rejected claims. As is made clear in the specification (see, e.g., page 7, lines 13-22) and as applicants had previously argued, the presence of the particular type and amount of precipitates is a characteristic and positive feature of the claimed invention. The amendments have been made to clarify this fact in view of the statement in the Final Office Action to the contrary. Thus, they were not earlier presented. Accordingly, it is submitted that the requested amendments should be entered.

To the extent that the amendments avoid the prior art or for other reasons related to patentability, competitors are warned that the amendments are not intended to and do not limit the scope of equivalents which may be asserted on subject matter outside the literal scope of any patented claims but not anticipated or rendered obvious by the prior art or otherwise unpatentable to applicants. Applicants reserve the right to file one or more continuing and/or divisional applications directed to any subject matter disclosed in the application which has been canceled by any of the above amendments.

### **The Rejection under 35 U.S.C. §103**

The rejection of claims 1-21 under 35 U.S.C. §103, as being obvious over JP 2001-335894 alone or in view of JP 406057383 is respectfully traversed.

Both of JP '894 and JP '383 teach Fe-Ni alloys for shadow masks. In both references it is positively required that the Cu content of the alloy not exceed 0.05% (= 500 ppm). Accordingly, neither references teaches or provides a generic overlapping teaching of an Fe-Ni alloy for shadow mask that contains "0.10 - 0.45% of Cu" as recited in the instant claims. Because of this clear difference of the instant claims from the prior art, in order to support a rejection under 35 U.S.C. §103 there must be clear motivation provided in the art to modify the cited prior art teachings to arrive at the claimed element regarding the amount of Cu. As stated in the MPEP §2143, the prior art reference (or references when combined) must teach or suggest all the claim limitations and the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). No suggestion to make the necessary modification is provided by the prior art of record or is otherwise supported on the record herein.

The Office Action alleges that it would have been obvious to select applicants' claimed alloy within the broader generic teachings of the prior art and cites MPEP §2144.05. But applicants' invention – due to the Cu content recitation – is neither within the generic scope nor overlapping the scope of JP '894 or JP '383. The reasoning recited in MPEP §2144.05 to support a *prima facie* case of obviousness only applies where the prior art range generically encompasses or overlaps the claimed range. See MPEP §2143.03 making clear that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580

(CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Contrary to encompassing, overlapping or suggesting a Cu content of 0.10 - 0.45%, JP '894 and JP '383 both direct away from such a range since they both state that the maximum amount of Cu is limited to 0.05%.

The argument in the Final Office Action that the difference between 0.05% and 0.10% is closely approximate is not a proper standard on which to allege obviousness under 35 U.S.C. §103. It does not matter how, allegedly, small the difference between the prior art and claims is. If there is a difference, there must be motivation to one of ordinary skill in the art to modify the prior art to eliminate the difference. No such motivation exists here. To the contrary, one of ordinary skill in the art is directed away from making such a modification by the JP '894 and JP '383 teachings which set 0.05% percent as the absolute maximum.

Further, it is submitted that the numerical difference, in relative terms, is highly significant. The maximum amount allowed by the prior art is only half of the minimum amount required by the instant claims. In the art of shadow masks, which are involved in providing high resolution in monitors/displays, resolution is at a very small scale. Such a large relative difference – applicants' minimum is 100% higher than the prior art maximum – in this art would be considered highly significant.

It is further stated in the Final Office Action that the difference between 0.05% and 0.10% would not be a patentable difference. But no objective reasoning or prior art teachings are cited to support this statement. As pointed out above, the mere numerical proximity is not sufficient basis for such an allegation.

The Final Office Action alleges that applicants have not shown criticality for the higher percentage of Cu. However, the burden does not lie with the applicants to show

criticality under these facts. The PTO has the initial burden to prove a *prima facie* case of obviousness before the burden shifts to applicants to show unexpected results or criticality. For the reasons discussed above – i.e., lack of motivation and, in fact, the teaching away from the claimed invention in the cited art – no *prima facie* case of obviousness is established on this record. Although unnecessary, the record does, in fact, evidence criticality in the Cu%, as discussed below.

The Final Office Action points out that applicants' original claims encompassed 0.05% as the minimum of the Cu content range. But this is irrelevant to either the motivation issue or the alleged lack of criticality issue. It is impermissible to use applicants' own specification as a hindsight basis for obviousness; see, e.g., In re Carroll, 202 USPQ 571 (CCPA 1979); and, In re Deminski, 230 USPQ 313, at 316 (Fed. Cir. 1986).

For all of the above reasons, it is urged that the combined teachings of JP '894 and JP '383 fail to establish a *prima facie* case of obviousness. For this reason, at least, the rejection under 35 U.S.C. §103 should be withdrawn.

The combined teachings of JP '894 and JP '383 are further deficient in failing to teach or suggest an Fe-Ni alloy material for a shadow mask in the form of a 0.05 - 0.3 mm thick foil strip having a total amount of MnS precipitates and precipitates of a composition shown in a binary phase diagram for Cu-S, both precipitates having a diameter of 0.01 - 3  $\mu\text{m}$ , located on the surface of the foil strip which is at least 2,000 count/ $\text{mm}^2$ . The amount taught in JP relates only to MnS pieces. The Final Office Action alleges that a similar amount and nature of Cu-S pieces would be expected. But there is no basis on which to make such allegation. Relatively, the amount of Cu in the prior art shadow masks are not similar to the amount of Cu in the claimed shadow masks. Applicants' minimum is 100% higher than the prior art maximum. There is no reasonable expectation that the prior art, with a much smaller

relative amount of Cu, would result in a similar amount of Cu-S pieces. Thus, a further basis for lack of a *prima facie* case of obviousness is established.

The MnS precipitates and Cu-S type precipitates are not only controlled by the composition of the materials, but are also controlled by the manufacturing steps. Specifically, as disclosed in the specification of the present application (see, e.g., page 10, line 13, to page 11, line 25), control is carried out by managing the material temperature during recrystallization annealing; see also claims 5 to 8 and 17 to 20. This is distinct from the high recrystallization annealing temperature of 1100°C disclosed in JP'894. Thus, these claims are further distinguished.

Although unnecessary, the data in the specification provides side-by-side examples and comparative examples showing the unexpected advantage of the amount of Cu according to the instant claims. The data is summarized in Tables 1 and 2 of the specification. Because of the amendments to the claims, Examples 3 and 5 in the Tables are comparative examples, not according to the invention. The data show that when the alloy is provided according to the instant claims, i.e., in Examples 1, 2, 4, 6 and 7, the frequency of etching defect generation in the shadow mask product is at the best Rank 1, which indicates no occurrence of defects per 100 sheets of mask material (see page 14, lines 1-15, of the specification). In Examples 3, 5 and 9 the amount of Cu in the alloy is at the 0.05% maximum of the prior art. The resulting products show less advantageous Ranks 2, 3 or 4 for the frequency of etching defect generation, each indicating the occurrence of an increasing level of defects. Examples 12-14 also show the disadvantage of lower levels of Cu, as taught by the prior art. None of the comparative examples show a product having the advantageous properties obtained when the elements of the current claims are met. (Note: for Example 11, which contains a combined amount of Mn and Cu above applicants' claimed range, the Rank is 1 but the

product is otherwise poor due to extensive thermal expansion). One of ordinary skill in the art could not have expected from the prior art teachings that the higher amount of Cu would provide the advantageous result in frequency of etching defect generation. Contrary to expecting any advantage, the prior art directs one of ordinary skill in the art away from using amounts of Cu above 0.05%.

The advantage of lower frequency of etching defect generation is highly significant for shadow masks. Applicants have attached with this Reply a document showing Apple Computer Inc.'s 14 inch monitor shadow mask specifications. The maximum resolution of the 14 inch monitor shadow mask is 800 x 600 (SVGA, dot pitch 0.36 mm). Therefore, 480,000 etching holes are present. In applicants' Examples in the specification, 100 sheets of shadow mask were evaluated for the proportion of defects. Therefore, the number of total etching holes is 48,000,000 (480,000 holes per sheet x 100 sheets) when a 14 inch monitor shadow mask is used for evaluation. For the samples which correspond to at least 0.1% Cu according to the present application (samples Nos. 1, 2, 4, 6, and 7), the proportion of defects was rank 1 (proportion of defects is 0%) and the 48,000,000 etching holes are normally pierced. In other words, among the 48,000,000 etching holes, the number of defective etching holes was 0. On the other hand, for the samples in JP'894 which correspond to 0.05% Cu the Rank was 2, 3 or 4, indicating that for 48,000,000 etching holes, there will always be one or more defective etching holes. In other words, when a large number of etching holes like 48,000,000 is provided, the advantage of the invention is significant in improving quality and the capability of omitting examination of the shadow mask. In other words, there is a large loss in manufacturing efficiency when the defective rank changes only one rank from rank 1 to rank 2. On this point, the present invention has criticality in the amount of Cu and Mn + Cu added as well the number of MnS precipitates and Cu-S type

precipitates. Excessive progression of etching, which conventionally occurred sectionally, can be completely suppressed. Also, the proportion of etching defects is 0% for 100 sheets of shadow mask, which means the product has absolutely no etching defects.


For the above reasons, it is urged that, even if a prima facie case of obviousness were established by the prior art, such case would be overcome by the showing of significant unexpected results for the claimed invention.

For all of the above reasons, the rejection under 35 U.S.C. §103 should be withdrawn.

It is submitted that the application is in condition for allowance. But the Examiner is kindly invited to contact the undersigned to discuss any unresolved matters.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

  
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## Apple Multiple Scan 14 Display: Technical Specifications

This article comprises the technical specifications for the Apple Multiple Scan 14 Display.

### Apple Multiple Scan 14 Display multiscn14

Physical		Power	
Introduced:	8/15/1995	Max Watts:	80
Discontinued:	n/a	Amps:	1
Tube Size:	14"	BTU per Hr:	273.6
Viewable Size:	12.4" VIS	Voltage:	90-132/198-264
Tube Type:	Shadow Mask	Freq Range:	47-63 Hz
Weight (lbs):	25		
Dimensions (in): 14.9 H x 14.4 W x 15.2 D			
Modes			
Mode	Resolution	Vert Rate	Horiz Rate    DPI
VGA	640x480	60 Hz	31.5 kHz 65
Macintosh	640x480	66.7 Hz	35.0 kHz 65
SVGA	800x600	60 Hz	37.9 kHz 81
SVGA	800x600	72 Hz	48.1 kHz 81

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